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(19) **United States**(12) **Patent Application Publication****Ikedo et al.**(10) **Pub. No.: US 2020/0021767 A1**(43) **Pub. Date: Jan. 16, 2020**(54) **IMAGE SENSOR AND IMAGE CAPTURING APPARATUS****H01L 31/107** (2006.01)**H04N 5/378** (2006.01)(71) Applicant: **CANON KABUSHIKI KAISHA,**
Tokyo (JP)(52) **U.S. Cl.**
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Hirokazu Kobayashi, Tokyo (JP)(21) Appl. No.: **16/507,342**(22) Filed: **Jul. 10, 2019**(30) **Foreign Application Priority Data**Jul. 12, 2018 (JP) 2018-132641
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H01L 27/146 (2006.01)(57) **ABSTRACT**

An image sensor of a photon counting type that suppresses a reduction in the efficiency of photon detection dependent on a pixel position, is disclosed. The image sensor comprising a pixel region in which a plurality of pixels are arrayed in a matrix, each pixel including a photoelectric conversion region and an avalanche breakdown region. In a plan view of a pixel, a size of the avalanche breakdown region is smaller than a size of the photoelectric conversion region. In addition, at least some of pixels arranged in a peripheral region of the pixel region, the avalanche breakdown region is formed such that a position thereof is shifted with respect to a position of the avalanche breakdown region in pixels arranged in a central region of the pixel region.

